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1. Symptomatology of Hemiplegia. H. OPPENHEIMER.
2. The Schleife, and the Centripetal Spinal Fibers from Deiters' Nucleus, the Quadrigemina, and the Substantia Reticularis. M. PROBST.
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1. *Symptomatology of Hemiplegia.*—Babinski, of Paris, recently described a triad of symptoms, which he considered pathognomic of organic, as compared with hysterical, hemiplegias. One of these is the manner of rising from the recumbent position. The hemiplegic, in so doing, flexes the paralyzed thigh on the trunk, and elevates the heel two or three feet from the bed; the functional paralytic does not. Oppenheimer claims priority in the description of this symptom. He further states that it accompanies all forms of spastic paralysis of the lower limb, and not hemiplegias alone. In case there be a hemiataxia in addition to the hemiplegia, it is betrayed by the grotesque, incoördinated manner in which the symptom produces itself.

2. *Schleife and Centripetal Spinal Fibers.*—The author's researches, which are based upon the study of degenerated tracts, establish the fact that the nucleus of Deiters is an intermediate station between the cord and the cerebellum, just as the nucleus ruber is between the quadrigemina and the cortex. Fibers arise in the cord, pass upwards in the anterior and antero-lateral columns, and end in Deiters' nucleus. These fibers are clearly demonstrated by the experimental method of degeneration, the tracts being stained according to Marchi. Further, after hemisections of the cervical cord, Deiters' nucleus is found to be atrophied. In addition to the two sets of bundles above mentioned, there is a third, which occupies the anterior area in the mid-brain. Collaterals pass from this fasciculus to the large ganglion cells of the substantia reticularis, and to the cells of Deiters' nucleus. R. WEIL (New York).

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1. The Fornix and Corpus Mamillare. L. EDINGER and A. WALLENBERG.
2. The Course of the Cortico-thalamic Optical Fibers, their Terminations in the Tween and Midbrain, and the Visual Association and Commissural Tracts. M. PROBST.
3. A Case of Combined Systemic Disease of the Spinal Cord with Mild Anemia. M. RHEINBOLDT.
4. A Tumor of the Spinal Cord with Operation. Remarks on the Brown-Séquard Paralysis and the Course of the Sensory Tracts in the Cord. A. BOETTIGER.

5. A Contribution to the Frankenburger Ergotismus Epidemic and Its Permanent Consequences. YAHRMÄRKER.
6. The Neuroglia Findings in the Brains of Thirty Cases of Psychoses. J. ELMIGER.
7. Alterations in the Blood Vessels in Miliary Hemorrhages of the Brain. L. W. WEBER.
8. Encephalopathia Infantilis Epileptica. HUGO LUKÁCS.
9. The Propriety of Divorce in Communicated Insanity (Folie à deux). ERNST KALMUS.
10. Spinal Cord Changes in Diphtheria. S. UTCHIDA.
11. The Testing of the Sense of Hearing in Aphasia. TREITEL.

1. *The Fornix and Corpus Mamillare.*—The authors limit the conception of the fornix to those fibers arising in the cornu ammonis and passing by way of the fimbria to the corpus mamillare, and include certain radiations arising in the limbic lobe which join the fornix anteriorly beneath the corpus callosum. Other tracts, as the tractus cortico-habenularis, tractus strio-mamillaris and the *Scheidewandbündel* are excluded from the fornix proper. They divide the corpus mamillare into a large medial and a smaller lateral nucleus. Vicq. d'Azyr's bundle is in relation with the median nucleus, while the pedunculus corporis mamillaris arises in the lateral nucleus. Edinger obtained for examination the brains of two dogs which had been operated on by Goltz. From dog No. 1, the entire brain mantle had been extirpated. including the corpus collosum and the psalterium. The animal had survived the operation one year, so the anterior pillars of the fornix were totally degenerated. As the anterior thalamic nuclei were uninjured, both tracti thalamus-mamillares were intact. The corpora mamillaria were uninjured. The medial ganglia of the corpora albicantia in their anterior two-thirds were found atrophic. The posterior one-third was normal. In the anterior portion of the medial nucleus, its medullary mantle and the pedunculus corporis mamillaris were normal.

Dog No. 2 survived the extirpation of both frontal lobes about six months. Post-mortem were found, besides an extensive internal hydrocephalus, a traumatic softening of the left optic thalamus in its anterior portion with degeneration of Vicq. d'Azyr's tract; the fornix on the left was also degenerated. On the right both of these structures were uninjured. The left corpus mamillare was reduced to one-third its normal size. This atrophy was most marked in the anterior two-thirds of the medial ganglion, only slightly present in the lateral ganglion. The medullary capsule was thinner than normal. From the unaffected corpus mamillare fibers crossed the middle line, which decussation was absent on the atrophic side. The pedunculus corporis mamillaris was unchanged.

Edinger concludes that the fornices terminate almost wholly in the medial ganglia, especially its antero-lateral and dorsal portion. A few fibers pass in the von Gudden's fornix decussation to the opposite side. That the Vicq d'Azyr's bundle terminates in the medial nucleus ventrally, some fibers, however, passing to strengthen the medullary capsule. The nucleus lateralis stands in intimate relation to the medullary capsule and the pedunculus corporis mamillaris.

Dr. Wallenberg studied the course of the fibers in the fornix in rabbits and mice. Either the cornu ammonis or the fornix at the bend of the anterior commissure was interrupted, by passing a tenatome into the brain. He found that no degeneration could be traced beyond the corpus mamillaris. Degenerations could be traced to the gray matter of the third ventricle (centralen Hohlengrau) and the tuber cinereum. No degenerations could be traced from one cornu ammonis to the fornix of the opposite side. In house rabbits and white mice the fornix terminates in the ventro-medial portion of the lateral ganglion and in the lateral portion of the medial ganglion. In giant rabbits (riesen-Kaninchen) the fornix decussates to the corpus mamillare of the opposite side. That the same tract should have a widely different termination in different species the author considers a new and most important anatomical point.

2. *On the Cortico-thalamic Optical Fibers.*—The writer reviews the experiments of von Monakow, who examined the brains of young animals several months after unilateral extirpations of the visual cortical center. In rabbits and cats, von Monakow demonstrated a degeneration of the medullary mantle of the external geniculate body, of the cells and fibers of the pulvinar and the brachium of the anterior corpus quadrigeminum; the optic tracts were normal. A dog's brain after extirpation of both cortical visual centers showed degenerations on both sides in the pulvinar, medullary mantle of the external geniculate bodies, the anterior corpora quadrigemina and their brachia and the dorsal portion of the optic radiations of Gratiolet. Probst further conducted a large series of experiments on cats. The caudal portions of the first, second and third convolutions (occipital lobe) were destroyed partially or totally on one side. Serial sections were made of the entire brain, which had been treated by the Marchi method; the animals were killed from two to three weeks after the operation. By this method the degenerations from the cortex to the primary optical centers were obtained alone, and were not vitiated by retrograde degeneration of the centripetal thalamo-cortical fibers, as would occur in the atrophy experiments utilized in the now classical researches of von Gudden and von Monakow. Probst found degenerated the dorsal portion of the medial optic radiations of Gratiolet. The ventral portion of the same is represented by centripetal thalamo-cortical fibers (demonstrated by previous experiments). Degenerated were also the superior medullary layer of the anterior corpus quadrigeminum and the inner layer of the stratum zonale of the same. At the posterior portion of the anterior corpora quadrigemina, near the sulcus transversus, degeneration could be traced to the superior medullary layer of the opposite side, forming a commissure. This decussation has long been recognized anatomically, but this proves its commissural character in relation to the optical centers. Furthermore, degenerations in the dorsal and medial portion of the medullary fibers passing to the external geniculate body, slight degeneration in the thalamic stratum zonale coursing in the direction of the ganglion habenulae. Degenerations are traced across the corpus callosum in its posterior and dorsal portion (forceps minor) to the occipital cortex of the opposite hemisphere. Slight degenerations are traced anteriorly in the fasciculus sub-callosus. The same result was reached in all the experiments.

From previous studies of the brain by enucleation of an eye the writer concludes that the retina on one side communicates with the external geniculate body, the pulvinar and anterior corpus quadrigeminum on both sides; hence a bilateral representation in the primary optical centers, with the exception of the small commissure described alone as unilateral. In these numerous researches no direct degenerations could be traced from the central to the peripheral neurone or from the peripheral to the central. The terminations of cortical and retinal fibers in the anterior corpora quadrigemina near the cells of origin of the *Vierhügel-Vorderstrangbahn* suggests the possible cause of reflex action. Probst believes with von Monakow that the primary and secondary optical neurones are connected by intercallary cells (Schaltzellen).

3. *Systemic Disease of the Spinal Cord and Anemia.*—A man aged twenty-eight years, after a prolonged exposure to cold, noticed a stiffness in the legs, which disappeared in three weeks. For one year his health was as usual; the previous stiffness then returned accompanied by ataxia, rapidly becoming paraplegia with bladder and rectal symptoms, loss of the tendon reflexes and decubitus. Pupils and skin reflexes normal, no pains, no paresthesia, no sensory disturbances except dulness of the pain sense shortly before death, which occurred eighteen months after the first exposure. Examination of the cord revealed a degeneration of the direct and crossed pyramidal tracts, increasing from above downwards; of the direct cerebellar tract, the cells and finer medial fibers of Clarke's columns; of the columns of Goll and Burdach, sparing, however, the posterior roots, Lissauer's marginal zone and the posterior root zone. Also a degeneration of the septo-marginal tract (dorso-mediales Bündel) in the lumbo-sacral region. The above sclerosis was strictly confined to the fiber systems. There was a moderate infiltration of the meninges and perivascular spaces with round cells; lymph spaces dilated from small hemorrhages of recent origin in the older areas of sclerosis. The blood vessels were thickened, but not obliterated. Because of the slight interstitial reversion with sclerosis but non-obstruction of the blood vessels, Dr. Rheinboldt would seek the cause in a toxemia, as suggested by Dana and Russel.

4. *Tumor of the Spinal Cord.*—The clinical notes are as follows: Three years ago a woman aged sixty-five years was seized with burning pains in the sole of the right foot, a swelling of the knee and sharp pains in the hip, also on the same side. A weakness in the right leg and very sharp stabbing pains in the left leg soon followed, which grew slowly but progressively worse. The examination showed an almost complete paralysis of the right leg, with exaggeration of the patellar reflex, ankle-clonus and Babinski phenomenon, and but trifling spasticity. On the left leg there was complete loss of the sense of pain and temperature extending upwards to Poupart's ligament anteriorly and the origin of the gluteus maximus posteriorly. The tactile sense was normal. The plantar reflex on the left was wanting, while the tendon reflexes were normal. On the right side corresponding to the navel anteriorly and the first lumbar spine posteriorly, and extending downwards the breadth of a hand, was an area of hypalgesia and diminished temperature sense. Within this was a narrow band of anesthesia. The muscle sense was lost in the right side. There was no hyperesthesia. Slight visual symptoms. The electrical reactions of the muscles of the legs and abdomen were normal. The abdominal walls were relaxed, their reflexes were absent. As the course of the disease was slow and progressive, a tumor was thought probable. Owing to its unilateral character and absence of irritative symptoms (no hyperesthesia, only moderate spasticity in right lower extremities, it was thought to be sub-dural, compressing and not infiltrating the cord. The analgesia pointed to the twelfth dorsal segment, but as in unilateral lesions this is uncertain (Sherrington and Bruns) the writer followed the motor indication and placed the lesion in the eighth dorsal segment, that is above the innervation of the abdominal muscles, which electrically were normal. The operation revealed a sub-dural psammoma compressing

the eighth dorsal segment; after its removal a della was left in the postero-lateral surface of the cord, but the posterior roots were not implicated. Hence the pains in the left leg, which were very violent, were of central and not "root" origin as was thought. The absence of tactile anesthesia in Brown-Séquard paralysis is not uncommon, and is attributed to a double representation in the cord. The author concludes that the fibers conveying sensations of pain pass through four segments of the gray matter before their decussation. Following the operation a very slight improvement in the motor and sensory symptoms is recorded.

5. *The Frankenburger Ergotismus.*—Dr. Yahrmärker presents twenty cases of poisoning from bread made with ergot of rye, observed by Prof. Mannkopf twenty years ago, during the epidemic which infested the villages of Frankenburg; also the present conditions of these patients still surviving, which were studied by Prof. Tuczek at the same time. In the first group twelve were men and eight women, all under twenty years of age. In some the symptoms appeared immediately, in others weeks or even months elapsed before the onset. The first and almost constant symptom was a prickling sensation in the limbs and extremities (Kriebel-krankheit) with no accompanying sensory disturbance. To this were added stiffness and ataxia of the limbs, great weakness, somnolence, transient dementia and in fifteen cases epilepsy. Other symptoms were headache, vertigo, tinnitus, muscæ volitantes, choreiform movements, pains in the arms and legs, muscular spasms, loss of the control of the sphincters. In a few cases livid blotches appeared on the skin, ulcerations and vesicles with pustular contents. Hence the convulsive form predominated; the gangrenous form was only indicated.

One autopsy is reported in which the vessels of the cord were found much injected with hemorrhages, recent, and old, surrounding them; granule cells and a focus of softening in the lumbar region. Of those reported by Prof. Tuczek, who still survive, some of the following conditions had persisted, although many had made a complete recovery. Knee-jerks absent on one or both sides, or very feeble; easily fatigued, very forgetful, slightly demented, imbecility, cramps in the legs, hallucinations, delusions, epilepsy. The descendants show no tendency to nervous affections.

6. *Neuroglia in Psychoses.*—The first and second frontal, middle Rolandic and the occipital were the regions selected for examination by D. J. Elmiger. The Weigert glia stain, as published in 1895, was the method used. In two cases of paranoia, two of melancholia and one of chronic confusional insanity, no changes were found. Five cases of epilepsy were studied in all of which the glia distribution was normal, excepting one case with dementia; here the astrocytes were increased and aggregated into glia nests, forming isolated foci. Six cases of senile dementia and one of senile melancholia showed a thickening of the marginal glia, a perivascular gliosis, astrocytes and amyloid bodies. In seven cases of dementia paralytica, an enormous increase of the marginal glia and perivascular glia. The granulations in the ependyma also consisted of glia. In this group the changes were most pronounced. In all excepting the epilepsy with dementia the glia increase was diffuse. Where the glia was augmented there was a corresponding atrophy of the brain.

7. *Miliary Hemorrhages of the Brain.*—Dr. L. W. Weber gives the following clinical study. A laborer, aged sixty-four years, was admitted to the asylum with the history of a severe fall on the occiput sev-

eral months before. He had been excessive in the use of alcohol for years, denied lues, no neuropathic tendency was elicitable. Since the injury he had been subject to headaches and vertigo, transitory hallucinations, paraphasia and weakness on the left side, on which the tendon reflexes were exaggerated. While under observation he had a series of left-sided convulsions with unconsciousness. Post-mortem the meninges were found normal, the vessels at the base stiff. The surface of the brain was dotted with circumscribed hemorrhages, varying in size from a pin's head to a cherry. They were particularly numerous posteriorly. On section the same sharply defined hemorrhagic foci were seen in the cortex and adjacent white matter. Teased preparations of the cortical vessels disclosed no miliary aneurysms. The vessels of the cortex were sclerosed, thickened, hyaline in appearance. Where the process is advanced, veins cannot be differentiated from arteries; many vessels are obliterated, the small branches of which respond to the specific stains for iron; also observed in many ganglion cells (siderosis). The hyaline vessels show a peculiar lamellated structure, in some of which the cellular elements are seen coursing between these several layers, causing rupture. Many of the perivascular lymph-spaces are filled with a homogeneous substance in which all bodies may be discerned, containing fat and pigment granules. Some vessels show a peculiarity with van Gieson's method, the outer layers staining red, the inner yellow, attributed to cellular inbibition of iron. There was a marked perivascular gliosis. The writer classes the case as a senile dementia, receiving its peculiar features from the alcoholic element, although recognising certain points as described by Binswanger and Alzheimer. Colloid degeneration was excluded because of staining tests. The above hyaline sclerosis remained undissolved by the action of acids and alkalies, and unstained by carmine and Weigert's fibrin stain. The amyloid reaction was absent.

8. *Encephalopathia Infantilis Epileptica.*—In the epilepsy of children Dr. H. Lukàcs refers to the great rareness of genuine epilepsy, the disorder being usually purely symptomatic and subordinate to an underlying brain condition (encephalopathia), associated with which some of the following organic changes are found: atrophy, sclerosis, degeneration, porencephaly and hypoplasia. As causative factors are mentioned: trauma occurring before, during or after birth, intoxications and infections (also intra-uterine), meningitis, encephalitis (Strümpell), rickets (Gowers). Clinically most cases with epilepsy present motor symptoms: hemiplegia, monoplegia, paraplegia, athetosis. Psychically the following are noted: mental restlessness, impulsive acts, constant change of mood, destructive, passionate, cruel with animals. The convulsions are often unilateral (Jacksonian), and if general, usually begin on one side; coma and unconsciousness are frequent. In support of the thought that stigmata in these cases are often acquired, the experiments of Lemoine, who produced asymmetry of the facial bones by injuring the brain in animals, are mentioned. In the majority of the cases an hereditary taint is not demonstrable. The most significant sign of degeneration, whether congenital or acquired, is considered a diminution of the power of inhibition, the easier elicitability of reflex action. For the above varied and long-recognized group of cases the comprehensive and formidable title is suggested of "Encephalopathia Infantalis Epileptica."

9. *Divorce in Communicated Insanity.*—Dr. E. Kalmus reports the following case. The patient, Mrs. M., of poor heredity and very questionable previous life, was married to her present husband in

1884. She was of a domineering and commanding nature, of which he was the reverse, being feeble and vacillating in character, with a worse heredity than the wife, having two sisters insane, one of whose children was imbecile. In April, 1896, the wife was admitted to the asylum, the husband having been committed six months previously; she had hallucinations of all the special senses with strange delusions of persecution, mostly of a sexual nature. The insane systems of herself and husband were intimately intertwined and were never inimical to one another, but rather of a protective character. The man was discharged in November, 1897, while the wife still shows no amelioration in her symptoms. It was noted that whenever husband and wife had met in the asylum, which happened at rare intervals, the man's symptoms were always aggravated. A female patient with whom Mrs. M. had daily intercourse, a mild paranoiac, became much worse under her influence, her delusions taking the same violent character as Mrs. M's. After separation she soon returned to her former state. The fact that Mrs. M's son had also presented transitory symptoms of hallucinations of hearing is also of interest. The writer believes this to be a case of induced insanity (folie communiqué, inducirtes Irresinn), the strong paranoiac system of Mrs. M. finding a favorable site for implantation and development in Mr. M. As is usual in such cases the source of the evil remains permanently affected, the victim recovering. Mr. M. was allowed a divorce.

10. *Spinal Cord Changes in Diphtheria.*—Dr. S. Utchida refers briefly to the pathological changes in the nervous system hitherto described: congestion, hemorrhagic softening and thrombosis; degeneration of the cells of the anterior horns with or without degeneration of the myelin in the peripheral nerves; degenerations in the peripheral nerves alone. The changes described by Katz (1897) with the Marchi method receive especial attention. They consisted of an indistinctness of cell body and nucleus, fine black granules in the cell body, some of which were cleft or in fragments. Many cells were normal. In the white matter numerous minute, semilunar, black masses were seen on the surface of section, either in direct apposition with the axis cylinder or between the fibers in the interstitial structures. On longitudinal sections the sickle-shaped changes in the nerve fibers were of short extent only, the fiber above and below presenting a normal appearance (fleckiges Aussehen). The same change was noted in the peripheral nerves and most pronounced in the anterior and posterior root fibers. Katz based his observations on the study of three cases with moderate paralysis; medulla, cord and nerves of all were examined by the Marchi method. Dr. Utchida examined the cords of twelve cases with diphtheria without paralysis, and one of diphtheria with paralysis. In seven of these cases the minor spinal changes described by Katz were found with the exception of the cleft and fragmented cells. In two cases the changes were present, but slight, and in two cases were absent. In addition six cases without diphtheria were examined; in two the black granules in the cells and partially degenerated segments in the nerve fibers were noted; in two, present but trifling, and wanting in two. Hence Dr. Utchida concludes that this condition is in no wise peculiar to diphtheria, but is normal, or at least found in diverse pathological states, that the particles staining black with the osmium (Müller) mixture is not a degenerative, but an infiltrative product (fat). The variability in this change after perusing the clinical records of these cases, he believes is explained by the age. This infiltration fat in the

nervous system is not found until about the fourth year. This peculiarity of the ganglion cells had been noted previously by Rosin (1895).

11. *Hearing in Aphasia.*—Dr. Treitel mentions the importance of differentiating the cerebral from the labyrinthine form of deafness; also the great rarity of the absolute loss of the perception of sound or speech in the above types. Prof. Bezold demonstrated the important fact that the range for vocal audition was from B of the third octave to G of the fourth octave. He devised a continuous series of tuning forks including the various tones of this range. By this means he showed conclusively that many deaf-mutes, who in general could not hear, perceived a number of these tones. Dr. Treitel concludes by presenting a case as demonstration, which will not bear abstraction. J. R. HUNT (New York).

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1. Two Cases of Syringomyelia. E. HUET and R. CESTAN.
2. Sub-Cortical Motor Aphasia. LADAME.
3. Mental Confusion and Cerebellar Syndromes during Uremia. Effects of Lumbar Puncture. G. SCHERB.

1. *Two Cases of Syringomyelia.*—The authors sum up the story of their two patients. Little by little, without fever but rapidly, a muscular atrophy of a myelopathic character took place, associated with sensory and motor troubles. These sensory motor troubles could be caused only by a syringomyelia; this diagnosis, indeed, was given without discussion for the first patient. There was for its proof the complete dissociation by the syringomyelocele of sensibility, muscular atrophy with fibrillary twitching, modifications of electrical reactions, spasmodic paraplegia, and finally, the progress of the affection. In the case of the second patient there was neither this complete dissociation of sensations nor the spasmodic paraplegia. It is very well know that these two signs may fail in the course of syringomyelia. Indeed, in this disease, one rarely proves, the authors think, the complete dissociation of sensibility. There is rather the incomplete dissociation, that is to say, a hypesthesia to simple touch sensation associated with analgesia, pricking and temperature sensation. On the other hand the absence of spasmodic paraplegia simply shows the soundness of the pyramidal region to be unaffected by glioma. Besides, syringomyelia is the only affection which can explain the appearance and slow progress of muscular atrophy of a myelopathic character, and the additional sensory symptoms. In these cases the sensory affections were very strictly localized in certain root regions well delimited, corresponding exactly to those figured by Kocher: the root territory above the brachial plexus and the cervical root region, in the first case; the roots below the brachial plexus and the region of the dorsal roots in the second. Moreover, this root distribution is demonstrated from the standpoint of both motor and sensory symptoms. In the first patient there was a particular injury to the muscles corresponding to the higher roots of the brachial plexus, and also to a slight degree, especially on the right, to the muscles corresponding to the third and fourth cervical roots (trapezius). It was noted, moreover, in this patient, that the gliomatous process extended unequally to the anterior and posterior cornua, while sensation was a little more affected on the right than the left, motility was affected more on the left than the right. In the second